



Analysis of Efficiency and Effectiveness of Elective Clean Surgical Operations without the use of Antibiotics at Serang Benggala Hospital

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Abstract: The cost of Elective Clean Surgery (OBBE) services has increased almost throughout the world, caused by several factors, one of which is the use of antibiotics, which will affect morbidity, mortality and costs.

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This research was conducted at Benggala Hospital Serang to discuss the comparison of the efficiency and effectiveness of the results of Elective Clean Surgery (OBBE) services with and without antibiotics. This retrospective study used patient medical record data for the period April 2022 to March 2023, then the data was analyzed descriptively quantitatively using SPSS and Microsoft Excel. The results of the research show that the cost efficiency of antibiotics and injection service fees saved is IDR 250,000.00 per patient, so in a year the average OBBE service at Benggala Hospital saves IDR. 145,750,000.00. The time saved for preparing and administering antibiotic injections is an average of 15 minutes per patient. For the effectiveness of the research results, it shows that no infections occurred in patients during and after elective clean surgical operations, which was 100% or as many as 25 OBBE service patients without antibiotics were in the safe category without infection, the blood test results included Hemoglobin, Leukocytes and Platelets for all patients in the normal safe category, there was no significant increase in body temperature, the average wound healing time was 10 days. Research data shows that the patient's condition has improved 100%, 0% have not recovered, 0% have died. The conclusion of the research results, if the results of this research are applied, then the efficiency and effectiveness of OBBE without antibiotics can be achieved, it is very useful so it becomes important information for specialist surgeons

and hospital directors. Meanwhile, other patients avoided antibiotic resistance.

Key words: clean elective surgery, use of antibiotics, cost efficiency and effectiveness.

INTRODUCTION

The increase in the cost of elective clean surgery occurs almost all over the world, including in Indonesia, partly due to the unnecessary use of antibiotics and the increase in the number of clean surgery operations due to increasing public awareness of health and increasing life expectancy.

From the results of a study in 2019, the annual cost of clean elective surgery in the USA reached \$100 billion, and each year increases by approximately 4%, as well as in Asia (Japan, China and India). The author did not find data on Elective Clean Surgery in Indonesia. At Bengal Hospital, Serang City, there has been an increase in the number of Elective Clean Surgery patients by 4% from 2021 to 2022.

The increasing prevalence of cases of antibiotic resistance due to microbes continues to increase, according to data from the Ministry of Health, 1.27 million people die every year due to infections that are resistant to antibiotics. Where this is caused by misuse of antibiotics, obtained without a doctor's prescription, the large number of antibiotics used in animals and plants. Experts estimate that Anti-Microbial Resistance (AMR) could cause global annual Gross Domestic Product (GDP) to fall by 3.8% in 2050, in which case we must try to prevent it.

Based on this background, the author examined the analysis of the efficiency and effectiveness of elective clean surgery without using antibiotics compared to using antibiotics.

RESEARCH METHODS

This research method compares the efficiency and effectiveness of the results of Elective Clean Surgery between groups who use antibiotics and those who do not use antibiotics. This study is retrospective from April 2022 to March 2023 with a sample of 50 people, 25 people without antibiotics and 25 people with antibiotics. regardless of gender and aged between 15-60 years and do not have comorbidities such as diabetes mellitus, auto immune disease, obesity and hypertension. The data taken is from laboratory examinations including Hemoglobin, Leukocytes and Platelets as well as the patient's body temperature before and after surgery. Analysis of data from the results of laboratory examinations of Hemoglobin, Leukocytes and Platelets before surgery and after surgery, results of the patient's body temperature before and after surgery, analysis of test data, comparative costs of time and energy and the results of Elective Clean Surgery.

RESULTS

Results of the analysis of the effectiveness of the factors observed were age between 15-60 years, diagnosis included clean elective surgery, operation time did not exceed one hour, research dates from April 2022 to March 2023. Clinical data observed were, leukocytes, hemoglobin, platelets and temperature. The sample was 25 Elective Clean Surgery patients with antibiotics and 25 patients without antibiotics.

➤ Results of Effectiveness Analysis of DAb and TAb Elective Clean Surgery:

From the statistical test on the comparison of 2 treatment groups (Dab & Tab), the hypothesis test for the two groups using the Kolmogorov Smirnov Test produces a value of 0.482 and this is greater than the table value of 0.005, meaning there is no significant difference.

The leukocyte normality test of patients pre & post Elective Clean Surgery using the Kolmogorov Smirnov Test produced a value of 0.009 and this is greater than the table value of 0.005, meaning the data is normally distributed.

The hemoglobin normality test of patients pre & post Elective Clean Surgery using the Kolmogorov Smirnov Test produced a value of 0.664 and this is greater than the table value of 0.005, meaning the data is normally distributed.

The platelet normality test of patients pre & post Elective Clean Surgery via the Kolmogorov Smirnov Test produced a value of 0.574 and this is greater than the table value of 0.005, meaning the data is normally distributed.

From the processing of body temperature data obtained in degrees Celsius after analyzing both pre-operative and post-operative observations during treatment, the results were as follows: the average temperature before surgery was 36.2 oC while the temperature during treatment was 36.3 oC.

Analysis of the average recovery time for the length of recovery when compared between patients who underwent clean elective surgery with antibiotics and without antibiotics, the results were balanced after being calculated using the Ms.Excel average. The average healing result obtained was 9.66 days or rounded up to 10 days.

Comparison of the Effectiveness of Macroscopic Observation with and without antibiotics using the Mann-Whitney U statistical test showed that the Asym. Sig (two tailed) is $0.715 > 0.05$, so it can be concluded that the hypothesis is rejected. Thus, it can be said that "There is no difference in the outcome of the decision to recover between the DAb and TAb groups, because there is no significant difference, there is no influence of antibiotic use on the outcome of the decision to recover for Elective Clean Surgery patients at Bengal Hospital."

Results obtained from this research:

1. Average healing time is 9-10 days
2. None of the patients who underwent elective clean surgery with antibiotics or without antibiotics as a sample of this study experienced infection
3. Data on patient compliance with instructions and suggestions from doctors after returning from the hospital was 58.4%.

Results of Efficiency Analysis of Elective Clean Surgery at Bengal Hospital, Serang City in 2022-2023:

Referring to the Serang City Regional Regulation (September 2019) Based on the Serang City Regional Regulation for Small and Medium Operations with local anesthesia Rates (Rp. 3,078,000.00 + Rp. 1,025,726.00): 2 = Rp. 2,051,863.00 Or rounded up to an average of Rp. 2,100,000.00.

Meanwhile, from the analysis above, the cost of Elective Clean Surgery without antibiotics saves as much as Rp. 210,000 per patient, Rp. 200,000 when the patient is in hospital and Rp. 10,000 when the patient is at home (saving 10% of the total costs determined by the Serang City Regional Regulation.

DISCUSSION

From the research results, laboratory data (Hb, Leuko, Thrombo and Temperature) from the OBBE group with antibiotics and without antibiotics showed no difference, while the macroscopic data for wound healing from both groups was the same on average, namely 9-10 days.

On average, patient behavior follows the doctor's instructions and suggestions when the patient goes home (58.4%).

Cost savings on purchasing OBBE Antibiotics at Bengal Hospital, Serang City.

The cost of purchasing antibiotics as stock in question, specifically for antibiotics for OBBEs in the mild and moderate categories, is an average of IDR. 210,000.00 per patient, while from data at the Bengal Hospital in Serang City in 2022 there were OBBE procedures for 583 patients. If all patients do not use antibiotics during surgery or during hospital treatment and go home, Bengal Hospital can save Rp. 210,000 x 583 patients on antibiotics. Total IDR 122,430,000. for one year.

Service Fees (Nurse Honors) in administering antibiotics in an OBBE at Bengal Hospital, Serang City.

Costs for other health workers specifically serving antibiotics, because of the hospital. Bengal is a private hospital and the majority of the wage system for health workers is honorary, but this calculation is based on the regional minimum wage specifically for nurses in the Serang City area, Banten, the amount is between IDR 4,000,000.00 to IDR 7,000,000.00 (depending on the length of service and hospital capability class) with a working time of 8 hours per day on a shift system. Assuming the nurse's salary is IDR 6,000,000.00 per month and the working time is 160 hours per month, then the nurse's salary per hour is = $\text{IDR } 6,000,000.00 : 160 = \text{IDR } 37,500.00$ per hour. Rounded up to Rp. 40,000.00

Meanwhile, the calculation of the honorarium for special nurses administering antibiotics by injection (added as an incentive honorarium, as an OBBE team per patient and outside of the official monthly honorarium) is carried out with the assumption that the preparation time and administration of antibiotics by injection per case is 15 minutes, then the amount of the nurse's honorarium that must be paid by Bengal Hospital is $\text{IDR } 37,500.00 : 0.25 = \text{IDR } 9,375.00$. Rounded up Rp. 10,000.00 per patient. If on average per patient during pre and post OBBE they give 2 - 6 antibiotic injections (an average of 4 antibiotic injections per patient, then the management of Bengal Hospital must provide an incentive of IDR 40,000.00 per patient. In one year, Bengal Hospital can save 583 patients x IDR 40,000 = IDR 23,320,000.00. So the efficiency of Bengal Hospital in one year handling Elective Clean Surgery is $\text{IDR } 122,430,000 + \text{IDR } 23,320,000.00 = \text{IDR } 145,750,000.00$ per year.

CONCLUSION

1. Medical data from laboratory results includes Hemoglobin, Leukocyte and Platelet content as well as the patient's body temperature pre and post OBBE in the normal and safe category.
2. The length of time to be declared cured in both groups was equal, namely 9 - 10 days.
3. The efficiency and effectiveness of elective clean surgery without administering antibiotics at the Bengal Hospital in Serang City, Banten Province was achieved.
4. OBBE services without antibiotics must pay attention to age range, condition of the tissue being operated on, whether or not there are initial comorbidities in the patient, sterility of the room, equipment, equipment and team of personnel implementing the OBBE.
5. The cost that can be saved by each OBBE patient without antibiotics is IDR 250,000.00. (Antibiotics and nurse incentives), as well as for the state through National Health Insurance or other health insurance, the cost savings are equal to IDR 250,000.00.
6. The costs that can be saved by Bengal Hospital for OBBE services without antibiotics and paying nurse incentive services for administering antibiotics in a year is IDR 23,320,000.00. Meanwhile, the savings in procuring antibiotic stocks in a year is IDR. 122,430,000.00. The efficiency of Bengal Hospital in one year handled Elective Clean Surgery as many as 583 people and could save Rp. 145,750,000.00 per year.

7. No or no cases of surgical wound infections and other complications were found in patients in the group who did not use antibiotics in OBBE at Bengal Hospital, Serang City.
8. From the results of clinical data tests and patient recovery rates between the OBBE group with antibiotics and without antibiotics at Bengal Hospital, Serang City, it was found that there was no difference in the success of OBBE in the two groups and the effectiveness of healing in both groups was generally the same in healing time.
9. Generally, patients participate in maintaining behavior regarding compliance with caring for surgical wounds and following the doctor's advice.

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